

REMARKS

Claims 14-33 are presently in the application. Claims 1-13 have been canceled.

Claims 16 and 25 have been rewritten in independent form including all of the limitations of their respective parent claims. Thus, no new issue is raised and no new search is required by this amendment. Further, the amendments to claims 16 and 25 do not affect the scope of any other claim.

Claims 24 and 31 have also been amended to improve the language of the claims. The substantive scope of these claims has not been changed.

Claims 14-27 stand rejected under 35 U.S.C. 103(a) as unpatentable over by Nagasaki et al (US 6,127,760) in view of Amendola et al (US 4,629,918).

Independent claim 14 is directed to a primary element (10) for an electrical machine, comprising: a magnetically conductive body (11) assembled from laminations resting axially on one another and having a plurality of axially extending teeth (15) disposed in a star pattern (13), a winding (12) of individual annular coils (17) which are wound separately as coil-body-less air coils and thrust radially onto the teeth, a compensation element (20) on at least one face end of the magnetically conductive body, the compensation element having a transverse strut (201) embodied in gable-like fashion which is elastically deformable in the axial direction of the tooth and being placed onto each of the face ends, located in a transverse plane to the body axis, of the teeth, and the annular coil which is thrust onto the tooth being pressed axially onto the at least one compensation element; and a closed ring element (19) joining all the compensation elements together to make a compensation mask (18).

In the Final Rejection (FR), the examiner again describes Nagasaki et al as teaching “a winding of individual annular coils which are wound separately as coil-body-less air coils and thrust radially onto the teeth” and cites Figs. 5 and 6 and col. 1, ll. 31-37 for support. This finding of fact by the examiner is clearly erroneous.

Nagasaki et al describes FIG. 5 as an exploded perspective view of the stator core and the insulating end plates; FIG. 6 is described as a perspective view of the stator of the DC motor (see, col. 3). Neither Fig. 5 nor Fig. 6 teaches “a winding of individual annular coils which are wound separately as coil-body-less air coils and thrust radially onto the teeth.”

Col. 1, ll. 31-37, cited for support by the examiner, is actually evidence that the coils in Nagasaki et al are wound on teeth of the stator core, not as individual annular coils which are wound separately as coil-body-less air coils and then thrust radially onto the teeth as the examiner has found. Col. 1, ll. 31-37 teach that:

An automatic winding machine is usually used to wind coils on the respective teeth of the stator core for the DC motor. Guide members referred to as “formers” are reciprocally moved lengthwise with respect to each tooth so that a wire, namely, a magnet wire is guided to be moved for every one turn pitch. Thus, each coil is formed into a predetermined shape. (Emphasis added)

Thus, contrary to what the examiner has found, Nagasaki et al actually teaches that the coils 13, 14, 15 are wound directly on the teeth (see, also, col. 5, ll. 62, 63; and col. 6, ll. 13, 14 and ll. 30, 31) with the end plates 8 and 9 disposed between the coils and the teeth 3, 4.

Attention is also directed to the language “the annular coil . . . being pressed axially onto the at least one compensation element” and “the annular coil which is thrust onto the tooth being pressed axially onto the at least one compensation element.” In Nagasaki et al, the windings are

wound directly on the teeth 3, 4. There is no teaching in Nagasaki et al that the coils are “pressed axially” onto the end plates 8 and 9, which the examiner construes as the applicants’ claimed compensation element.

On pages 9 and 10 of the FR, the examiner explains the interpretation being given to the language “a winding of individual annular coils which are wound separately as coil-body-less air coils and thrust radially onto the teeth,” “the annular coil . . . being pressed axially onto the at least one compensation element” and “the annular coil which is thrust onto the tooth being pressed axially onto the at least one compensation element.”

The examiner explicitly states that “the phrase ‘winding of individual annular coils which are wound separately as coil-body-less air coils and thrust radially onto the teeth and the annular coil which is thrust onto the tooth being pressed axially onto the at least one compensation element’ is thus non-limiting” (FR, p. 10). The examiner’s justification for finding the quoted claim language “non-limiting” is that, according to the examiner’s interpretation, the language defines a product by the process used to make the product. According to the examiner, “[t]he patentability of the product does not depend on its method of production. If the product in the product by process claim is the same or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. In re Thorpe, 777 F.2d 695,698,227 USPQ 964, 966(Fed. Cir. 1985).”

The claim in issue in Thorpe, reads as follows:

44. The product of the process of Claim 1.

In other words, the product recited in claim 44 was defined entirely by the method recited in claim 1. Such is clearly not the case with respect to applicants' claim 14. Applicants' claim 14 is not a product-by-process claim. The claim is an apparatus claim which describes a particular type of coil.

Applicants' specification teaches that it is known in the art that coils may be produced by winding the coils onto coil bodies or core bodies and then the coils and core bodies are thrust radially onto the teeth of the stator star or the coils may be produced in coil-body-less fashion, as so-called "air windings" or "air coils" and then placed in the same way on the teeth of the stator star as coils wound onto coil bodies. See, spec, paragraph 5. Claim 14 defines an "air coil" which is structurally different from a coil produced by winding the coil wire directly on the teeth of a magnetically conductive body as taught by Nagasaki et al. A primary element such as taught by Nagasaki et al would not include a space between the axial end face of the tooth on which the coil is wound and the curved portion of the coil (this space is referred to in Amendola et al as "creep distance" at col. 3, l. 26). As illustrated in applicants' Fig. 4, such a spacing exists in applicants' invention (shown approximately by the spacing "s" in Fig. 4).

MPEP 2113 instructs examiners that

The structure implied by the process steps **should be considered** when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and

"etched" are capable of construction as structural limitations.)
(Emphasis added)

Thus, the examiner has erred by disregarding the language of claim 14 which clearly defines structure not found in Nagasaki et al.

In addition, the examiner finds that Nagasaki et al teaches a "compensation element," namely, the insulating end plates 8 and 9 (see, for example, Fig. 5) on which the coils are wound and "a closed ring element (presumably, the ring-shaped portion 10 in Nagasaki et al) joining all the compensation elements together to make a compensation mask." However, the examiner has acknowledged that Nagasaki does not teach that the "compensation element" has a transverse strut embodied in gable-like fashion which is elastically deformable in the axial direction of the tooth.

To solve this basic deficiency in Nagasaki et al, the examiner finds that Amendola et al teaches: (1) "a spacer in the form of a transverse strut embodied in gable-like fashion," citing Figs. 2-5, elements 44, 54, 96 in support of this finding; and (2) that the spacers can be made of different shapes, including "a gable like fashion."

Based on these findings of fact, the examiner concludes that "[i]t would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify the device of Nagasaki et al to use the transverse strut embodied in gable-like fashion as taught by Amendola et al (Figs 2-5). The motivation to do so would be that it would allow one to produce a motor wherein the windings are held in a predetermined position (abstract of Amendola et al) and to provide an insulating arrangement which appropriately spaces windings

from an associated core while permitting thermal and electrical expansions and contractions of the winding (Col. 1, ll. 53-57 of Amendola et al).”

The rejection is clearly based on a hindsight reconstruction of the prior art. If one of ordinary skill in the art were to consider the teachings of the prior art, without the benefit of having read the applicants’ specification, the logical result of combining the teachings of Nagasaki et al and Amendola et al would be a prime element including the U-shaped end plates 8 and 9 of Nagasaki et al and the separate flexible spacer-coil retainer 44, 54 or 96 of Amendola et al. There simply is no rationale for concluding that one of ordinary skill would have included “a closed ring element joining all the compensation elements together to make a compensation mask” as suggested by the examiner.

It is also pointed out that, in Amendola et al at col. 3, l. 56 and col. 4, l.1, it is stated that the spacers (44) “are formed of a rectangular sheet of NOMEX insulating material.” It is also shown in Figs. 2a through 4a that the “spacer-element” can be folded quite simply from a “sheet material.” This kind of embodiment of a “spacer 44” that is produced explicitly for each tooth element singularly from a piece of rectangular sheet material teaches unambiguously away from applicants’ claimed “gable-like fashioned compensation elements” formed as a closed-ring element.

Moreover, the “insulating end plates” 8 and 9 in Nagasaki teach away from the embodiment of separate “coil-body-less air coils” and, therefore, provide no occasion for one skilled in the art to form the “insulation plates” 8 and 9 as flexible “compensation elements.”

In addition to the language in claim 14, claim 16, and its dependent claims, further require “parallel ribs embodied on the outer face, facing away from the tooth, of the compensation elements, the ribs being spaced apart from one another in the radial direction of the tooth.” No such structure is found in Amendola et al.

To reject claim 16, the examiner refers to Figs. 2 and 5 of Nagasaki et al. The examiner finds that “Nagasaki et al teaches (Fig 5) parallel ribs embodied on the outer face, facing away from the tooth, of the compensation elements (Fig 5, 6b), the ribs being spaced apart from one another in the radial direction of the tooth (Fig 2, 6D)” (FR, p. 4).

What Nagasaki et al actually teaches (col. 7, ll. 12-21) is that

[t]he slot insulating portions 6 and 7 have a plurality of guide grooves 6d and 7d located at circumferential both ridges of the tooth covers 6a and 7a respectively as shown in FIGS. 1 to 3. Each of the guide grooves 6d and 7d has approximately the same width as the diameter R (=0.6 mm) of the magnet wire and a depth set approximately at one half of the diameter R of the magnet wire. The turns of the magnet wire constituting the lower most layers of the respective coils 13 to 15 are accommodated in the guide grooves 6d and 7d.

In other words, one of ordinary skill is taught by Nagasaki et al to provide guide grooves 6d and 7d at circumferential ridges of the tooth covers 6a and 7a, apparently for the purpose of guiding the wire as it is wound on the insulated teeth.

Claim 16 requires “parallel ribs embodied on the outer face . . . of the compensation elements.” The “compensation elements” 44, 54, 96 in Amendola et al are strictly for positioning the winding with respect to the core and for preventing the shifting of the winding with respect to its associated core (col. 1, ll. 60-64). The coils are not intended to be wound

directly on the elements 44, 54, 96. Thus, there would have been no reason for one of ordinary skill to have formed the elements 44, 54, 96 of Amendola et al with the guide grooves 6d and 7d of Nagasaki et al.

Still further, claim 25 requires the ring element to be formed by a thin-walled annular sleeve, from whose outer wall the compensation elements protrude in a star pattern, and wherein the annular sleeve comprises a protruding portion (Fig. 1, 211), which protrudes axially past the transverse struts of the compensation elements and which, when annular coils have been placed on the teeth, covers the undersides of the coil heads of the annular coils.

In applicants' claimed device, the thin-walled annular sleeve extends axially beyond the elastic compensation elements as shown in Figs. 1 and 2, so that the annular sleeve also insulates the windings radially relative to the rotor. No such structure is found in either Nagasaki et al or Amendola et al.

Claims 28-32 stand rejected under 35 U.S.C. 103(a) as unpatentable over Nagasaki et al and Amendola et al in view of Uchida et al (US 5,763,978) and claim 33 stands rejected under 35 U.S.C. 103(a) as unpatentable over Nagasaki et al and Amendola et al in view of Hsu (US 6,400,059).

Neither Uchida et al nor Hsu teaches a compensation element on at least one face end of a magnetically conductive body, the compensation element having a transverse strut embodied in gabled fashion with a closed ring element joining all the compensation elements together to make a compensation mask.

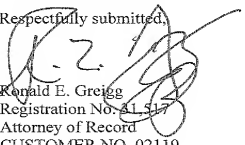
Appl. No. 10/591,861
Amdt. dated May 4, 2009
Reply to Final Office action of Feb. 3, 2009

Thus, even if it had been obvious to one of ordinary skill to combine the teachings of Nagasaki et al, Amendola et al and Uchida et al or the teachings of Nagasaki, Amendola et al and Hsu, one of ordinary skill in the art would not have obtained a primary element which included all of the claimed limitations set forth in claims 28-33.

Please charge the fee for any necessary extension of time to deposit account No. 07-2100.

Entry of the amendment and allowance of the application are respectfully requested.

Respectfully submitted,



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